



Physical Evidence Bulletin

Fire Debris - Ignitable Liquid Evidence

Purpose The Physical Evidence Bulletin is a guideline intended for law enforcement agencies and fire departments for the collection and submission of evidence to BFS Laboratories. Physical Evidence Bulletins are not intended to be used in lieu of training in the collection of evidence.

Analysis and results that may be obtained The Bureau of Forensic Services (BFS) provides analytical support to law enforcement agencies and fire departments through the examination of fire debris for ignitable liquids from a suspected arson scene.

Fire debris examination may determine the presence of ignitable liquids that could have been introduced into a suspected arson scene. Examination of the debris or liquid collected from the scene may identify gasoline, petroleum distillates/products and specialty solvents. The examination generally cannot identify specific brands. The report will usually give examples of potential ignitable liquids, but the list should not be considered all inclusive.

Precautions Beware of incendiary or explosive devices. Do not touch any suspected incendiary or explosive device. Evacuate the area, and request the services of personnel trained in the removal of such items.

Depending upon the case circumstances, other evidence may be present. An investigator may need to consider materials used by an arsonist, such as candles, cigarettes, matchbooks, Molotov cocktails, and fused chemical masses (e.g., fusee). Other evidence to consider are latent prints, toolmarks, broken glass, shoe/tire prints, blood stains, saliva, and trace evidence. See the Physical Evidence Bulletins for collection and preservation of other types of physical evidence.

Collection, marking, and packaging Ignitable liquids are volatile and easily lost through evaporation. The evidence samples should be collected, stored, and transported in such a way that there can be no question about cross contamination between the samples.

Evidence collected from a crime scene should be appropriately identified and packaged in clean and unused airtight containers (recommended for fire debris). A comparison

sample (see below) should be collected when available. Packaging should be marked with the location where the evidence was found, the date and time the evidence was collected, and the name or initials of the individual who collected the evidence. Make sure to securely affix the lid on the can or jar and securely heat seal bags to avoid holes or gaps in the seal.

Contamination prevention:

- Use clean disposable gloves and tools for collecting items.
- Change gloves between collection of unrelated items of evidence or when they become soiled.
- Clean or change tools between different locations within a scene (disposable tools can be used).
- Collection gloves, evidence markers, etc. should not be put in any container that contains a sample to be analyzed. These items could interfere with the analysis and interpretation of the results.

Collection:

Solids:

- Collect evidence in clean unused airtight containers such as metal cans, glass jars, or heat-sealed bags recommended for fire debris (e.g. nylon or Kapak bags that are designed for fire debris) and seal.
- Contact the laboratory for questions regarding the use of Kapak bags. Kapak bags can be checked in advance for the presence of any interfering profile by the laboratory. Alternatively, submit an empty heat-sealable bag as a comparison sample (“control”).
- Do NOT use plastic containers, plastic bags, or paper bags; they are porous to ignitable liquids and could interfere with the profile of the sample in question.
- Do not fill the containers to the top (maximum 2/3 full-do not pack down the contents).
- Soil samples should not be more than ½ full. Freeze soil samples to inhibit microbial degradation or transport items containing soil to the laboratory as soon as possible.

Liquids:

- Liquid samples can be packaged in clean unused airtight glass jars (e.g. Qorpak® bottles), in small metal cans, or the original container if available. For glass jars, Teflon lined lids are recommended.
- If a container is found to contain a large quantity of suspected ignitable liquid, take a sample of the liquid (no more than 1 ounce). Photograph the liquid sample collected next to its original container, if applicable.

Comparison Sample:

- **Always** try to obtain a sample of any ignitable liquid that could have been used at the scene.
- Obtain **comparison substrate samples** (such as carpets, drapes, upholstery, soil, wood, etc.) that are not suspected of containing an ignitable liquid as they may aid in providing information to the laboratory analyst regarding what is normally present in a specific substrate material.
- Place each comparison sample in a separate air tight container (recommended for fire debris). If possible, use the same type of container that the question sample was collected in (see above).

Package and storage of evidence:

- Pack evidence containers to prevent breakage.
 - If possible store evidence items in a refrigerator or freezer. Do not store this evidence in a warm area. Submit evidence to the laboratory as soon as possible.
 - If latent print analysis is required in addition to an examination for ignitable liquids, the item of evidence should be kept at room temperature.
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Submission of evidence to the laboratory

Label the container with the agency case number, item number, and brief description as appropriate. Tape seal the container; date and initial the seal. Submit evidence to the laboratory along with a completed Physical Evidence Submission Form (BFS-1) and, if available, a case report or case summary.

The lab does not accept or process

The lab does not accept incendiary or explosive devices that have not been rendered safe or high explosives. For collection see Physical Evidence Bulletin for Low Explosives Evidence (PEB #14).

Containers with a large amount of suspected ignitable liquids. If unable to take a sample, pre-arrange with laboratory personnel to sample the container when it is brought to the laboratory. The container and its remaining contents will be immediately returned after sampling.

For further information and additional resources

Additional resources to consider are National Fire Protection Association (NFPA) 921 and other recognized national guidelines.

Please contact your regional BFS laboratory with any further questions that you may have.

For a list of regional laboratories please go to:

http://ag.ca.gov/bfs/pdf/bfs_brochure.pdf or <http://ag.ca.gov/bfs/>

To locate the most current Physical Evidence Bulletins please go to:

<http://ag.ca.gov/cc/reference/reference.php#peb>

Local agencies may wish to consult with CAL FIRE (California Department of Forestry & Fire Protection).
